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on July 30th in that of the Anthrenus. We are not aware that this destructive museum pest is known to be thus affected.

LARVÆ OF MEMBRACIS SERVING AS MILK CATTLE TO A BEE.—Fritz Müller has observed in Brazil a larva of a leaf-hopper (*Umbonia indicator* Fairm.) which is used, like the Aphides by the ants, as milch cattle by a species of stingless bee (*Trigona cagafogo* Müll.) This bee is fond of oily matters, and feeds on carrion, old stinking cheese and oil secreted by various plants. Although stingless, it possesses a very intense venom, which causes a most lively irritation in the skin.

ANTHROPOLOGY.

A TRUE GEOGRAPHY OF THE BRAIN.—It has until lately been supposed that the convolutions of the cerebrum are entirely concerned in purely intellectual operations, but this idea is now at an end. It is now evident, from recent researches, that in the cerebral convolutions—that is, in the part of the brain which was believed to minister to intellectual manifestations—there are nerve-centres for the production of voluntary muscular movements in various parts of the body. It has always been taught that the convolutions of the brain, unlike nerves in general, cannot be stimulated by means of electricity. This, although true as regards the brains of pigeons, fowls, and perhaps other birds, has been shown by Fritsch and Hitzig to be untrue as regards mammals. These observers removed the upper portion of the skull in the dog, and stimulated small portions of the exposed surface of the cerebrum by means of weak galvanic currents, and they found that when they stimulated certain definite portions of the surface of the convolutions in the anterior part of the cerebrum, movements are produced in certain definite groups of muscles on the opposite side of the body. By this new method of exploring the functions of the convolutions of the brain, these investigators showed that in certain cerebral convolutions, there are centres for the nerves presiding over the muscles of the neck, the extensor and adductor muscles of the forearm, for the flexor and rotator muscles of the arm, the muscles of the foot, and those of the face. They, moreover, removed the portion of the convolution on the left side of the cerebrum, which they had ascertained to be the centre for the movements of the right forelimb, and they found that after the injury thus inflicted, the animal had only an imperfect control over the movements of the part of the limb in question. Recently Dr. Hughlings Jackson, from the observation of various diseased conditions in which peculiar movements occur in distinct groups of muscles, has adduced evidence in support of the conclusion that in the cerebral convolutions are localized the centres for the production of various muscular movements. Within the last few months these observations have been greatly extended by the elaborate experiments of my able colleague in King's College, Prof. Ferrier.

Adopting the method of Fritsch and Hitzig—but instead of using galvanic he has employed Faradic electricity, with which, strange to say, the investigators just mentioned obtained no very definite results—he has explored the brain in the fish, frog, dog, cat, rabbit and guinea-pig, and lately in the monkey. The results of this investigation are of great importance. He has explored the convolutions of the cerebrum far more fully than the German experimenters, and has investigated the cerebellum, corpora quadrigemina, and several other portions of the brain not touched upon by them. There is, perhaps, no part of the brain whose function has been more obscure than the cerebellum. Dr. Ferrier has discovered that this ganglion is a great centre for the movements of the muscles of the eyeballs. He has also very carefully mapped out in the dog, cat, etc., the various centres in the convolutions of the cerebrum, which are concerned in the productions of movements in the muscles of the eyelids, face, mouth, tongue, ear, neck, fore and hind feet, and tail. He confirms the doctrine that the corpus striatum is concerned in motion, while the optic thalamus is probably concerned in sensation, as are also the hippocampus major and its neighboring convolutions. He has also found that in the case of the higher brain of the monkey there is what is not found in the dog or cat—to wit, a portion in the front part of the brain, whose stimulation produces no muscular movement. What may be the function of this part, whether or not it specially ministers to intellectual operations, remains to be seen. These researches of Fritsch, Hitzig, Jackson, and Ferrier, mark the commencement of a new era in our knowledge of brain function. Of all the studies in comparative physiology there will be none more interesting, and few so important, as those in which the various centres will be mapped out in the brains throughout the vertebrate series. A new, but this time a true, system of phrenology will be founded upon them; by this, however, I do not mean that it will be possible to tell a man's faculties by the configuration of his skull, but that the various mental faculties will be assigned to definite territories of the brain, as Gall and Spurzheim long ago maintained, although their geography of the brain was erroneous.—Prof. RUTHERFORD *in Nature.*

Dr. Brown Sequard has called in question the conclusions given above in lectures delivered in Boston last March.

RATE OF GROWTH IN MAN.—In an interesting account of the life and works of the late Belgian anthropologist and statistician, Adolphe Quetelet, published in "La Revue Scientifique," occur the following remarks on the rate of growth in man. "The most rapid growth takes place immediately after birth; the infant in the space of a year grows about two decimetres.* The increase in size diminishes gradually as its age increases, up towards the age of four or five years; when about three it attains half the size which it is to become when full-grown. When from four to five years of age the increase in size is very regular each year up to sixteen years, that is to say up to the age of puberty; this annual increase is nearly fifty-six millimetres. After the age of puberty the size continues to increase, but feebly; when from sixteen to seventeen years old the individual increases four centimetres (·60 inch). In the two years following, it increases only one inch. The total increase in size of man does not appear to be entirely terminated when he is twenty-five years old. The mean size is a little larger in cities than in the country."

MICROSCOPY.

NEW ROTATING MICROSCOPE.—Mr. Browning has introduced into England the continental fashion of attaching the bar of the microscope to the stage which is made to revolve carrying the body with it. This, of course, gives a rotating stage without any difficulty in regard to centring. Any tremor, also, connected with the revolving apparatus is common to the object and the magnifying apparatus, and is therefore of little consequence. For objects illuminated from below, this arrangement is prac-

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*A decimetre is one-tenth of a metre, amounting to nearly four inches.